THE CLAIMS

Claims 20-34 and 36-53 are pending. Claims 1-19 and 35 have been previously cancelled. The Applicant requests reconsideration of the claims in view of the following remarks.

Listing of claims:

1. – 19. (Cancelled)

20. (Previously Presented) A system for processing signals, the system comprising:

a DSP (Digital Signal Processor) that applies Least Square Solvers (LESS) to adaptive filtering of adaptation observations for communication and control signals, wherein during said adaptive filtering, said DSP performs:

transforming said adaptation observations from a complex arithmetic to two corresponding sets of real number arithmetic observations by means of binary orthogonalization transformation (BOT);

computing two corresponding sets of real number arithmetic adaptation parameters by applying two respective real number LESS to said two corresponding sets of real number arithmetic observations;

transforming, after said computing with said two respective LESS, each of said two corresponding sets of real adaptation parameters to a single set of complex number arithmetic adaptation parameters using an inverse binary orthogonalization transform (IBOT); and

utilizing at least a portion of said single set of complex number arithmetic adaptation parameters for said DSP adaptive filtering of said adaptation observations.

21. (Previously Presented) The system according to claim 20, wherein said two respective real number LESS are applied in parallel.

22. (Previously Presented) The system according to claim 20, wherein said two respective real number LESS are applied in series.

23. (Previously Presented) The system according to claim 20, wherein each of said two respective real number LESS comprises a Recursive Least Squares algorithm (RLS).

24. (Previously Presented) The system according to claim 20, wherein each of said two respective real number LESS comprises a Least Mean Squares (LMS) algorithm.

25. (Previously Presented) The system according to claim 20, wherein each of said two respective real number LESS is a Householder transformation.

26. (Previously Presented) The system according to claim 20, wherein each of said two respective real number LESS is a Cholesky decomposition.

27. (Previously Presented) The system according to claim 20, wherein each of said two respective real number LESS is QR Decomposition (QRD).

28. (Previously Presented) The system according to claim 23, wherein said RLS is computed by a systolic array.

29. (Previously Presented) The system according to claim 20, wherein each of said two respective real number LESS utilizes one or more of a Block Matched Filter Estimator (BMFE), a Block Zero Forcing Estimator (BZFE), and/or a Block Minimum Mean Square Error Estimator (BMMSEE).

30. (Previously Presented) The system according to claim 29, wherein one or more of said BMFE, said BZFE, and/or said BMMSEE are computed via one or both of a Cholesky decomposition and/or a QR Decomposition (QRD).

31. (Previously Presented) The system according to claim 20, comprising means for constraining each of said two respective real number LESS as CLESS by using initial BOT from complex number arithmetic to real number arithmetic; means for applying two real computation, Constrained Least Square Solver, (CLESS), wherein each one produces P output streams; and means for implementing a corresponding number of P IBOT modules from said real number arithmetic to said complex number arithmetic.

32. (Previously Presented) The system according to claim 20 comprising means for performing one or more of temporal, spatial, joint temporal and/or spatial channel estimation of the signal.

33. (Previously Presented) The system according to claim 20 comprising means for performing one or more of temporal, spatial, joint temporal and/or spatial channel equalization.

34. (Previously Presented) The system according to claim 20 comprising means for performing carrier frequency estimation.

35. (Cancelled).

36. (Previously Presented) The system according to claim 20 comprising means for performing one or more of channel estimation, system parameter estimation, channel equalization, recursive updating of output parameters, non-recursive updating of output parameters, and/or system identification.

37. (Previously Presented) A system for processing signals, the system comprising:

at least one Digital Signal processor (DSP) that apply Least Square Solvers (LESS) for transforming adaptation observations from a complex arithmetic to two corresponding sets of real number arithmetic observations using binary orthogonalization transformation (BOT);

said at least one DSP applying LESS for computing two corresponding sets of real number arithmetic adaptation parameters by applying two respective real number (LESS) to said two corresponding sets of real number arithmetic observations; and

said at least one DSP applying LESS for transforming, after said computing with said two respective LESS, said two corresponding sets of real number arithmetic adaptation parameters to a single set of complex number arithmetic adaptation parameters using an inverse binary orthogonalization transform (IBOT); and

utilizing at least a portion of said set of complex number arithmetic adaptation parameters for adaptive filtering of said adaptation observations.

38. (Previously Presented) The system according to claim 37, wherein said two respective real number LESS are applied in parallel.

39. (Previously Presented) The system according to claim 37, wherein said two respective real number LESS are applied in series.

40. (Previously Presented) The system according to claim 37, wherein each of said two respective real number LESS comprises a Recursive Least Squares algorithm (RLS).

41. (Previously Presented) The system according to claim 37, wherein each of said two respective real number LESS comprises a Least Mean Squares (LMS) algorithm.

42. (Previously Presented) The system according to claim 37, wherein each of said two respective real number LESS is a Householder transformation.

43. (Previously Presented) The system according to claim 37, wherein each of said two respective real number LESS is a Cholesky decomposition.

44. (Previously Presented) The system according to claim 37, wherein each of said two respective real number LESS is QR Decomposition (QRD).

45. (Previously Presented) The system according to claim 40, wherein said RLS is computed by a systolic array.

46. (Previously Presented) The system according to claim 37, wherein each of said two respective real number LESS utilizes one or more of a Block Matched Filter Estimator (BMFE), a Block Zero Forcing Estimator (BZFE), and/or a Block Minimum Mean Square Error Estimator (BMMSEE).

47. (Previously Presented) The system according to claim 46, wherein one or more of said BMFE, said BZFE, and/or said BMMSEE are computed via one or both of a Cholesky decomposition and/or a QR Decomposition (QRD).

48. (Previously Presented) The system according to claim 37, wherein said at least one DSP applying LESS to constrain each of said two respective real number LESS as CLESS by using initial BOT from complex number arithmetic to real number arithmetic, wherein said at least one DSP applies two real computation, Constrained Least Square Solver, (CLESS), wherein each one produces P output streams, and wherein said at least one DSP implements a corresponding number of P IBOT modules from said real number arithmetic to said complex number arithmetic.

49. (Previously Presented) The system according to claim 37, wherein said at least one DSP applying LESS for performing one or more of temporal, spatial, joint temporal and/or spatial channel estimation of the signal.

50. (Previously Presented) The system according to claim 37, wherein said at least one DSP applying LESS for performing one or more of temporal, spatial, joint temporal and/or spatial channel equalization.

51. (Previously Presented) The system according to claim 37, wherein said at least one DSP applying LESS for performing carrier frequency estimation.

52. (Previously Presented) The system according to claim 37, wherein said system is an adaptive filter.

53. (Previously Presented) The system according to claim 37, wherein said at least one DSP applying LESS for performing one or more of channel estimation, system parameter estimation, channel equalization, recursive updating of output parameters, non-recursive updating of output parameters, and/or system identification.